

Motorola

HOME RADIO

S E R V I C E M A N U A L

MODELS

54X1	MAHOGANY
54X2	IVORY
54X3	LEAF GREEN

CHASSIS

HS-432

GENERAL INFORMATION

TYPE - AC/DC table model superheterodyne receiver with plated circuit chassis and loop antenna.

TUBE COMPLEMENT - 12BE6 conv; 12BA6 IF amp; 12AV6 det, AVC, 1st AF amp; 50C5 pwr amp; 35W4 rect.

TUNING RANGE - 535 to 1620 Kc IF - 455 Kc

POWER SUPPLY - 117 volts AC or DC; 35 watts

SERVICE NOTES

USE OF ISOLATION TRANSFORMER

The chassis of this receiver is connected directly to the power line, however, the power cord circuit is broken by an interlock when the cabinet rear cover is removed. When servicing or aligning this chassis from AC, an isolation transformer should be inserted between the power line and the chassis.

NOTES:

1. Reverse the line cord plug in the wall outlet if radio does not operate from DC. When operating from AC, reversing the line cord plug in the wall outlet may sometime improve reception.
2. CAUTION: Never connect the radio chassis to water pipe, radiator, or other ground.

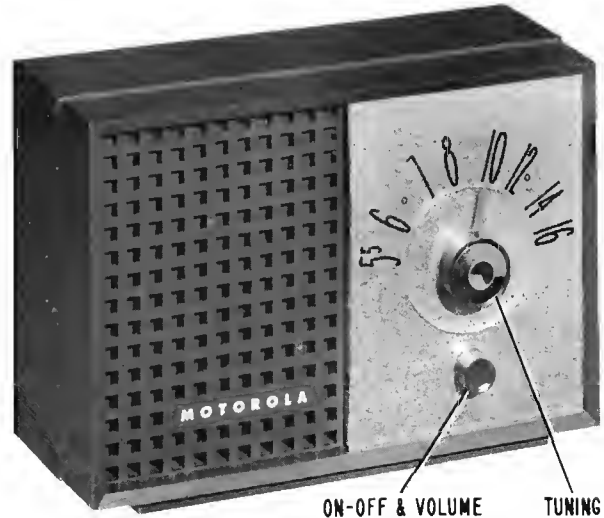
TO REMOVE CHASSIS FROM CABINET

1. Remove screws which hold the back cover and remove cover completely.
2. Pull off the control knobs and dial pointer from the front of the receiver.
3. Remove the Phillips head screw under tuning knob, on the front of the receiver.
4. From the back, remove screw which holds the line cord interlock plug.
5. Disconnect the speaker leads.
6. From the back, remove screw that mounts the chassis.
7. Remove chassis from the cabinet.

CIRCUIT DESCRIPTION

1. The circuit of this chassis is conventional - there are no built-in resistors or capacitors. Leads are plated on both sides of the chassis base, thereby replacing the usual connecting wires and making wiring more uniform.
2. The metal plating extends through all the holes on the chassis, connecting circuits on the front with those on the rear.

LIST APPLICABLE BULLETINS & SUPPLEMENTS HERE:



3. Reference to the schematic diagram and to chassis will permit the circuit to be traced easily.

SAFETY PRECAUTIONS

1. Do not service the chassis on a metal plate, because of the possibility of a short circuit.
2. Use caution when handling the chassis with power applied because all high voltage leads are exposed.
3. The outer edges of the chassis and various plated areas are at ground potential.

COMPONENT REPLACEMENT

1. To prevent tube breakage, remove them before replacing components. CAUTION: Remove the tubes only by pulling them straight out. Wiggling a tube may bend a socket clip causing poor contact with the tube pin.
2. WHEN REMOVING DEFECTIVE COMPONENTS USE ONLY A SMALL SOLDERING IRON (60 WATTS OR LESS) TO AVOID DAMAGE TO THE WIRING. DO NOT USE A SOLDERING GUN. WARNING: THE LEADS ARE VERY THIN, AND EXCESSIVE HEAT WILL BURN THEM OR LOOSEN THEM FROM THE BASE MATERIAL.
3. Plated connections or leads, if damaged, may be replaced with a jumper of regular hook-up wire.
4. It is recommended that multiple lug components be removed by immersing all the lugs simultaneously into a controlled temperature soldering pot, Motorola Part Number 66T632703. The component may then be lifted off the chassis easily. If a soldering pot is not available, heat each lug

individually with a small soldering iron and shake or brush off as much molten solder as possible. Then, by alternately heating and loosening each lug, the entire component will be freed.

5. An individual tube clip may be removed by squeezing it with pliers and then unsoldering it. The new clip snaps into the hole.

6. Resistors or capacitors may be removed by unsoldering one end at a time.

CAUTION: Clean all the solder from the holes before installing a new component. Do not let the solder run onto an

adjacent lead, as a short circuit will be created.

SPEAKER PHASING

THE SPEAKERS MUST BE IN PHASE OR A LOSS OF THE LOW FREQUENCIES WILL RESULT. Phasing can be checked by momentarily connecting a 1-1/2 volt flashlight cell in parallel with the output transformer secondary and noting that the cones of all speakers move in the same direction. If they do not, reverse the connections of one speaker.

ALIGNMENT

Use an isolation transformer between the power line and the receiver. If not available, connect low side of generator to ground (outer chassis edges) through a .1 mf capacitor.

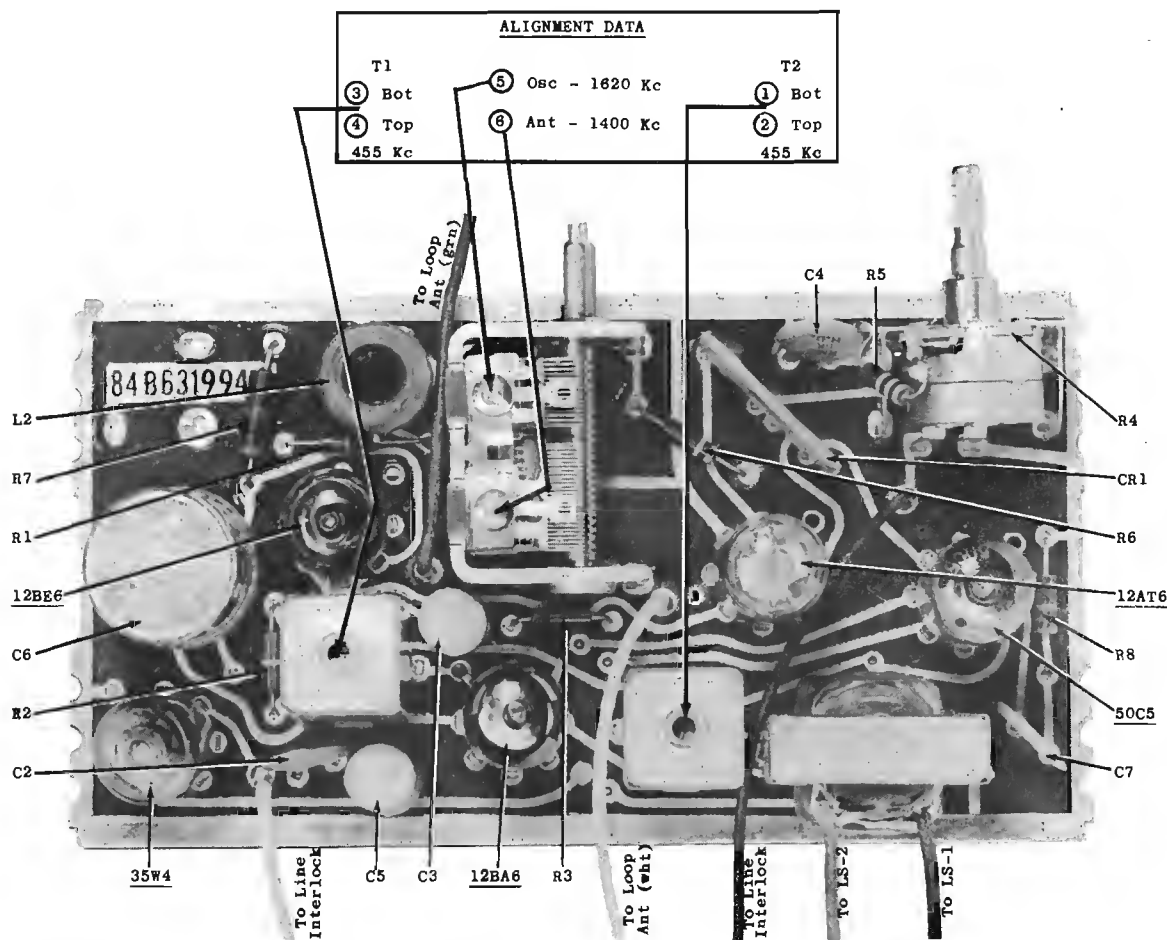
Connect a low range output meter across speaker voice

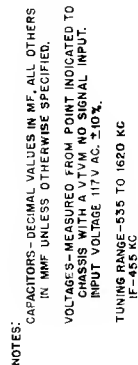
coil and set volume control to maximum.

Set signal generator output to produce .565 volts across voice coil. As stages are aligned, reduce generator output to maintain the .565 volt level to avoid overloading the receiver.

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY (400 cycle mod)	GANG SETTING	ADJUST	REMARKS
IF ALIGNMENT						
1.	.1 mf	Grid of conv. (pin 7, 12BE6)	455 Kc	Fully open	1, 2, 3, & 4 (IF cores)	Adjust for maximum. Use insulated screwdriver.
RF ALIGNMENT						
2.	.1 mf	Grid of conv. (pin 7, 12BE6)	1620 Kc	Fully open	5 (Osc)	Adjust for maximum.
3.	-	Radiation loop*	1400 Kc	Tune for max	6 (Ant)	Adjust for maximum.

*Connect generator output across 5" diameter, 5 turn loop and couple inductively to receiver loop. Keep loops at least 12" apart.





REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part Number	Description	List Price	Ref. No.	Part Number	Description	List Price
ELECTRICAL PARTS				T-1	*24C631955	Transformer, 1st IF: 455 Kc	1.40
Capacitors				T-2	*24K631969	Transformer, 2nd IF: 455 Kc	1.30
C-1	*19C631985	Variable, 2-gang.....	3.10	T-3	*25B631979	Transformer, output: 6.4 ohm sec.....	1.55
C-2	21R120853	Ceramic Disc: .01 mf 450V..	.25				
C-3	8A120842	Paper: .05 mf 200V.....	.25	Part Number	Description		List Price
C-4	21R121165	Ceramic Disc: .005 mf 450V..	.25	CHASSIS MECHANICAL PARTS			
C-5	8K121268	Paper: .05 mf 400V.....	.25	42B610632	Clip, tube pin.....per/c		.50
C-6	23B632015	Electrolytic: 50-30 mf/150V	1.75	29A630183	Lug, terminal (on connecting leads)		
C-7	21R120853	Ceramic Disc: .01 mf 450V..	.25	doz		.35
CR-1	21B630180	Multiple Capacitor-Resistor Plate.....	.85	28A631078	Plug, line cord (interlock).....		.10
L-1	*1V632060	Loop & Panel Assem: incl line cord.....	2.55**	CABINET PARTS			
L-2	*24B631990	Coil, osc.....	.85	*16E631977	Cabinet, plastic: mahogany (53X1)		***
LS-1	50C632415	Speaker, PM: 4"; 3.2 ohm VC	3.70**	*16K632521	Cabinet, plastic: ivory (53X2)...		***
		exch	2.80	*16K632522	Cabinet, plastic: leaf green (53X3).....		***
LS-2	50K632416	Speaker, PM: 4"; 3.2 ohm VC	3.70**	30K610638	Cord, line: with plug & recept...		.95
		exch	2.80	*36B631974	Knob, tuning.....		.45
Resistors - Note: All resistors are insulated carbon type unless otherwise specified				*36B631975	Knob, volume control.....		.15
R-1	6K119405	22,000 20% 1/2W.....doz	1.20	*52B631976	Pointer, dial.....		.45
R-2	6K119405	22,000 20% 1/2W.....doz	1.20	*34C631972	Scale, dial.....		2.00
R-3	6K119402	100 20% 1/2W.....doz	1.20	*3S121326	Screw, thread cutting: #6 x 3/8; pl hex hd (chassis & spkr mtg)doz		.20
R-4	*18B631980	Volume Control: 1 meg; with sw.....	1.40	PRICES SUBJECT TO CHANGE WITHOUT NOTICE			
R-5	6K121704	33,000 20% 1/2W.....doz	1.20	*New Item, Appears in any List for First Time			
R-6	6K119407	3.3 meg 20% 1/2W.....doz	1.20	**Plus Federal Excise Tax at Current Rate			
R-7	6K119404	1000 20% 1W.....	.20	***Prices Furnished Upon Request			
R-8	6K119403	150 20% 1/2W.....doz	1.20				

